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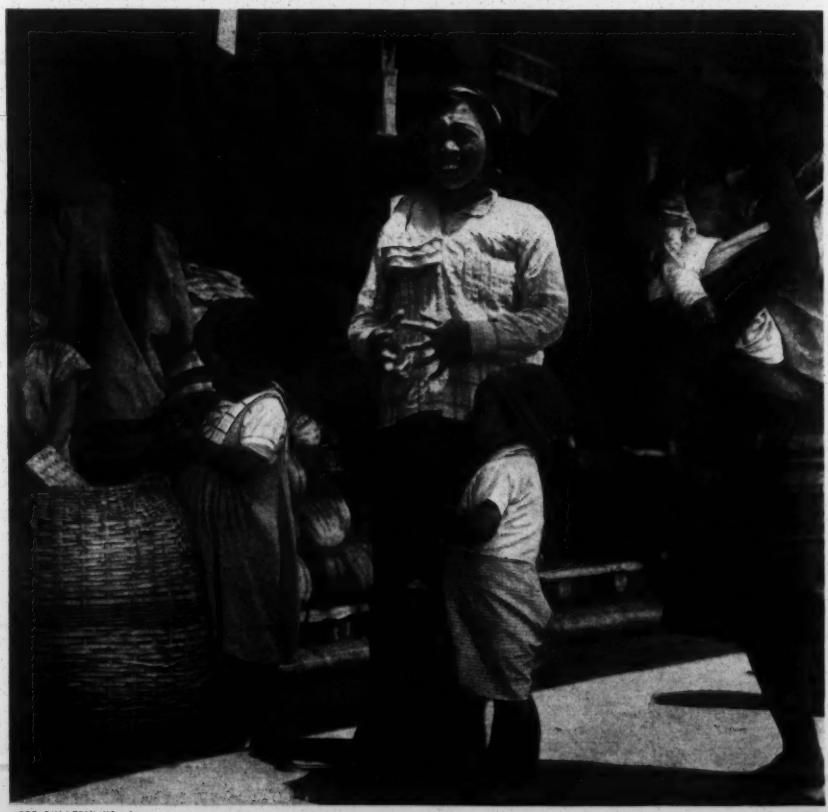

(SEE BULLETIN NO. 3) J. BAYLOR ROBERTS

NO BABY SITTERS IN BAGUIO! CHILDREN GO TO MARKET WITH MOTHER IN THE LUZON HILL TOWN

Baby travels in a hammocklike sling to match mother's "peasant" skirt. These hill people wear the familiar "separates" so popular in the United States. Sonny's checked pants also look stylish.

Bulletin No. 1, March 31, 1952

African Eclipse Provides Scientific Clues

DR. GEORGE VAN BIESBROECK, leader of the National Geographic Society expedition to the Anglo-Egyptian Sudan to photograph the February 25 eclipse, is already planning to return to Africa to make further photographs late this summer.

Dr. Van Biesbroeck, who is associated with the University of Chicago's Yerkes Observatory, flew back to the United States via Frankfurt and London, and stopped briefly in Washington before going to his home in Williams Bay, Wisconsin.

Arabs Locked up Wives

Aside from scientific aspects of his work, Dr. Van Biesbroeck reported the effect of the total eclipse of the sun on the population of the Sudan. His headquarters was Khartoum, capital of the vast African country. It stood at the center of the path of totality, along with its twin city, Omdurman (illustration, inside cover) across the Nile.

He said that the Sudanese, misunderstanding warnings that continued observation of the eclipse might be harmful to the eyes, feared that mere exposure to the darkened sun might be harmful. As a result, Dr. Van Biesbroeck reported, many Arab wives were locked in dark rooms, and mosques were filled to overflowing at eclipse time. The Sudanese government made every effort to warn its citizens of the approaching display—even the remote hillmen of Kordofan (illustration, next page).

The astronomer explained that further photographs are necessary to complete his work, which is to check the "Einstein shift," or gravitational attraction of such stellar bodies as the sun for light rays.

The theory of the Einstein shift is that the rays are bent by this gravitational attraction as they pass the sun. By photographing stars beyond the sun's rim during an eclipse, and then photographing the same star field at night several months later from the same position, astronomers can measure the displacement of the star images on the plates taken during the eclipse to check the amount the stars' light is bent as the rays pass the sun.

Slight Distortion in Photographs

Dr. Van Biesbroeck reported that weather conditions for the National Geographic and other observing parties in Khartoum were almost perfect on February 25, although a high wind made his telescope-camera vibrate slightly and caused a minor distortion of the images on his plates.

The distortion was not enough, Dr. Van Biesbroeck said, to alter his plans to return to Khartoum to complete the experiment. He believes weather conditions favor a return in late August or early September. The exact date of his return will be determined later.

The eclipse came on a Monday morning in Khartoum. The giant shadow of the moon was not visible in the United States. It first appeared at sunrise in the mid-Atlantic and then traced a 9,000-mile path across

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M. VENIERIS

THE BROAD NILE STRETCHES OUT FROM OMDURMAN, THE SUDAN CITY RECENTLY DARKENED BY A TOTAL ECLIPSE OF THE SUN (Bulletin No. 1)

Bulletin No. 2, March 31, 1952

Lod Sets Rebuilding Tempo in Israel

REPORTS from the Near East indicate that the Arab League and the new nation of Israel may be preparing to bury the hatchet completely and end the uneasy truce that has prevailed since organized shooting stopped almost four years ago. Such a development would leave both parties free to look toward a peaceful build-up of wastelands, torn cities, and divided provinces.

One famous old city of the Holy Land already is making a comeback. More than 3,000 years old, Lod—known in recent centuries as Lydda—is scheduled to play an important role in the modern life story of Israel (map, next page).

New Buildings and Utilities

When Israeli forces took the city from the Arabs in 1948, it was nearly in ruins. Houses were crumbling and streets were full of rubbish. There was no water supply or electricity. Only a short time earlier, Lod's 20,000 inhabitants had been faced with the feeding and housing of some 50,000 refugees.

Today the old city wears a fresh wardrobe of new and repaired houses, shops, factories, parks, and schools. Electricity, a water system, and street-cleaning services have been installed. The largest airfield for civil air communications in Israel lies on the municipality's outskirts.

Lod's new population, about 13,000 permanent residents, gives the city a highly international flavor. Largely immigrants, the new inhabitants have poured into Lod from 25 European and north African countries during the past four years.

To pierce the babble of many tongues, shop signs are displayed in three or more languages and shopkeepers often speak as many as six languages. Lying as it does on Israel's main north-south road and railroad, Lod's cosmopolitan interests may help restore the town to its ancient and valued position as trading, transport, and communication center of the region.

Home of Britain's Patron Saint

Lod, also known in ancient times as Ludd, was founded, or at least reconstructed by one of the sons of Benjamin, according to the Bible. From the years of the Second Temple, about 515 B.C., the town flourished as a trading center on the road leading from Jaffa to Jerusalem. The Apostle Peter is reported to have converted to Christianity the entire population following the healing of Eneas.

Later, one of the murderers of Julius Caesar sold the townspeople into slavery, but Antony restored their freedom. Under its Roman name, Diospolis, Lod became a large and wealthy city, and a seat of learning. It never fully recovered from a Mongol sack in 1271.

Of interest to the Western world is Lod's connection with a saint and his legendary man-eating dragon. St. George, patron saint to Great Britain, is believed to have been born and entombed in Lod. It was there that tradition says he fought and killed the dragon.

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tropical Africa and the Middle East to a point near Lake Baikal in Siberia.

At Khartoum the "path of totality" was more than 85 miles wide. At 11 a.m. the blazing sun was completely covered by the dark disk of the moon. Totality lasted three minutes; in that short time scientists made many of their most important measurements.

NOTE: Anglo-Egyptian Sudan shows on the National Geographic Society's map of Africa. Write the Society's headquarters, Washington 6, D. C. for a map price list.

For further information about eclipses, see "Operation Eclipse: 1948," in the *National Geographic Magazine* for March, 1949; "Eclipse Hunting in Brazil's Ranchland," September, 1947; and "Eclipse Adventures on a Desert Isle (Canton)," September, 1937. For further information on the Sudan, see "With the Nuba Hillmen of Kordofan," February, 1951; "Three-Wheeling Through Africa," January, 1934; and "Two Fighting Tribes of the Sudan," October, 1929. *(Back issues of the Magazine may be obtained from the Society's headquarters at 60¢ a copy, 1946 to date; $1.00, 1930-1945; and $2.00, 1912-1929. Earlier issues, when still in print, varied prices.)*

See also, in the GEOGRAPHIC SCHOOL BULLETINS, November 12, 1951, "Anglo-Egyptian Sudan Involved in Suez Crisis."

GEORGE RODGER—MAGNUM

NATURE TREATED NUBA STICK FIGHTERS LAST MONTH TO A RARE SPECTACLE—A TOTAL ECLIPSE

Huks and Hillmen Harry Philippine Army

TWO groups of guerrilla fighters have been battling it out in the Philippines, but not with each other. This duplication of battle areas presents a difficult situation for the soldiers of the young republic's army, whose presence is required to deal with disorder in two places at the same time.

In central Luzon, violence recently broke out again between communist-led Hukbalahaps (Huks for short) and government forces trying to preserve law and order, while, in the mountains of northern Luzon (the Philippines' largest island), the "pagans" continue their tribal wars. In the Philippines the word pagan refers to tribespeople who are neither Christian nor Moslem. There are about 1,000,000 of them in the islands.

"Igorot" an Indefinite Term

Across northern Luzon, between the China Sea and the Philippine Sea, are scattered a number of major tribes, including the Ilocano, Tinguian, Ifugao, and Bontoc. These groups are broken into many smaller units with differing names and customs. "Igorot," which means "mountain people," is a name commonly given to many of these tribes (illustration, cover). The term is often applied to all pagan tribes of northern Luzon except the Negrito; or to various groups of only two or three tribes.

When the Japanese invaded the Philippines in 1941, there were about 350,000 members of the various fierce tribes north of Manila.

The great majority of the nearly 20,000,000 people of the republic —more than 90 per cent—are Christian. Of these, the Visaya, of the central islands, number more than 7,000,000. The Tagálog of the Manila region, of whom there are more than 4,000,000, are the dominant group. They have developed a native literature and government leaders.

Negrito Is Most Primitive Islander

Rivalry between the outnumbering Visaya and the more advanced Tagálog has so far defeated attempts to establish Tagálog as the official language of the republic. The 87 native languages and dialects also complicate matters. English—spoken by 4,000,000 natives—and Spanish have long been the common languages of business and government.

The islands' most primitive people are the small, shy Negrito. They decorate their bodies with scar patterns made by cutting the skin deeply and rubbing in charcoal or some such irritating substance. They file their teeth almost flush with their gums so as not to resemble the dog, which they consider an inferior being. They hunt with arrows and blowgun darts dipped in the quick-acting poison of jungle trees. The average height of these almost-pygmy people is four feet, nine inches.

Among the hill tribes of Luzon, organized head-hunting is dead. They practiced it for centuries, partly because they wanted to make a name for themselves, partly because they believed the custom would ward off evil spirits. When the United States inherited the Philippines in 1898, as a result of the Spanish-American War, Americans began teaching the natives

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In the 12th century the Crusaders built in the town a church named for St. George. When they returned to Europe they continued to worship the saint. Today a part of the Crusaders' church can be seen in Lod's Greek Orthodox Church of St. George.

NOTE: Lydda may be located on the Society's map of Bible Lands and the Cradle of Western Civilization.

For additional information, see "The Ghosts of Jericho," in the *National Geographic Magazine* for December, 1951; "Home to the Holy Land," December, 1950; "An Archeologist Looks at Palestine," December, 1947; and "American Fighters Visit Bible Lands," March, 1946; see also, in the GEOGRAPHIC SCHOOL BULLETINS, February 11, 1952; "Israel Adds Marble to Its Export List"; and "Land and Water Problems Vex Israeli and Arab," November 19, 1951.

DRAWN BY H. E. EASTWOOD AND IRVIN E. ALLEMAN

ISRAEL TAKES THE LION'S SHARE OF OLD PALESTINE. LYDDA (Lod) LIES SOUTHEAST OF TEL AVIV

New England Shows off Its "Sugarin' off"

A BIT of rural Americana not often witnessed by city dwellers was put on view the past two week ends when southern New Hampshire folks invited New Yorkers to come up and watch a "sugarin' off." This early-spring activity in New England is preceded by the tapping of the area's sugar-maple trees and the gathering of the sap. Boiling down this sap to make maple sugar and sirup is called sugaring off.

Attractions scheduled for the visitors included square dances, skiing, hay rides, and breakfast pancakes smothered in real maple sirup. When the party was over, the ear-muffed farmers of the area kept right on at their frosty workaday jobs in the sugar bush, for the boiling-down process could continue only as long as there were freezing nights and warm days.

P.O.: Vermont, New Hampshire?

Vermont heads the 10 states producing maple sugar and sirup. New Hampshire ranks seventh in the production of sirup and fifth in sugar. New Hampshire farmers are so concerned over their state's relatively low output that some of them have considered the possibility of renaming one of their towns "Vermont." This would enable them to put the label "shipped from Vermont" on their out-of-state shipments.

The reason for even considering such trickery is the general public's insistence on a Vermont label when buying maple products. New Hampshire growers are equally insistent that there is no noticeable difference between the products of each of the twin states. They say their state lacks by some 50 per cent reaching the production potential of its accessible sugar bush.

Considerable numbers of producers, it is reported, would like to expand their operations, but lack the stands of trees, while near by they see orchards standing idle. Some enterprising farmers lease these neighboring orchards and transport the sap to their own "sugar houses" in order to process it.

The modern maple-sugar producer often uses a tractor for the sap-gathering chore just as the modern dairy farmer milks by machine rather than by hand. But oxen and horses still appear on the scene today (illustration, next page).

Farmers Milk the Maples

The sugar maple is attractive as well as useful. In autumn its leaves turn brilliant yellow, orange, and red. Also known as the hard maple, its wood has been prized since colonial times for use in furniture and flooring. Its average mature height is 100 feet. It grows from Newfoundland to the Great Lakes, south to Georgia, and west to Manitoba and Texas. Canada's national emblem is the maple leaf.

Sugar farmers milk the maple by boring a hole an inch or two into the side of the trunk. They insert a trough into the hole and hang a pail at the end. The sugary sap bleeds into the bucket. The farmer collects it every day, making the rounds with a sled-borne tank.

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to show their courage in sports less grisly than head-hunting—wrestling, tribal tugs of war, and baseball. An armed police force known as the Philippine Constabulary backed up their program.

Yet even after half a century of "civilized" sports, some nonconforming suitor, by taking an enemy head to impress his girl, may start a feud. Army units must then be diverted from their war against the Huks in the central ricelands to quell tribal outbreaks in the northern mountains.

These feuds are fiercer than ever since sidearms of the tribesmen no longer are limited to bows and arrows, bolos, spears, and axes. The addition of an occasional rifle or machine gun, taken from the harassed Filipino police, brings new rules to the game.

Each enemy head once meant increased esteem among the warriors. Skulls are still displayed on doorposts or along the eaves of huts. American troops hunting Japanese in the Luzon hills in the summer of 1945 found startling evidence that the brutality of World War II had brought ancient tribal instincts to the surface. Helpfully marking the trails were guideposts holding heads not long removed from Japanese soldiers.

NOTE: Luzon is shown on the Society's map of the Philippines.

For further information, see "What Luzon Means to Uncle Sam," in the *National Geographic Magazine* for March, 1945; "Facts about the Philippines," February, 1942; and "Return to Manila," October, 1940.

CHARLES MARTIN

THE IFUGAO FARMERS WHO ENGINEERED THESE AMAZING MOUNTAIN-CLIMBING RICE TERRACES ONCE WERE ARDENT HEAD HUNTERS

Bulletin No. 5, March 31, 1952

Few Lives Lost in Japan's Record Earthquake

THE earthquakes that have hit the northern Japanese island of Hokkaido this month have not been major disasters because there has been no heavy loss of life.

Japan has so many earthquakes that the Japanese people give them names to tell them apart. Officially they named the biggest tremor on March 4, "The Earthquake off Tokachi". Tokachi is a district in south central Hokkaido. This earthquake centered about 43 miles off the coast and some 60 miles below the ocean's surface. Japanese scientists say it was the heaviest quake in 68 years and more severe than the 1923 temblor. This famous "Kwanto Earthquake" (named for the Kwanto Plain near Tokyo) caused widespread damage and some 143,000 deaths in the Tokyo-Yokohama area 29 years ago.

Hokkaido Is Sparsely Populated

The deaths from this month's tremors have not totaled more than a few dozen. Officials give several reasons for the small casualty list. Hokkaido has a relatively small population—$\frac{1}{24}$ of the entire country. Farsighted Japanese had installed an efficient warning service which spread the alarm. Most of the earthquake-wise population along Hokkaido's coast fled after the first shock without even waiting for the warning. They believed that huge waves of water—seismic sea waves—would follow. They were right.

Hokkaido's damage in twisted and torn railways and shattered buildings was small compared to the 1923 disaster (illustration, next page). This calamity centered in a heavily populated district of nearly 6,000,000 —three fourths the number on all Hokkaido. No other earthquake has so nearly destroyed the capital (Tokyo) and principal port (Yokohama) of a large nation. Officials have reported no serious fires in the recent disaster. But in 1923 great flames, fanned by 50-mile-an-hour winds, swept unchecked through large urban areas.

Some of Japan's smaller earthquakes accompany volcanic activity. The Japanese islands have many volcanoes. Sometimes by observing them, scientists can accurately predict earthquakes and thus save many lives. Japanese scientists had watched the big Sakurajima volcano (at the southern tip of Kyushu, the southernmost large island) for several years prior to 1914. They accurately predicted the volcano's violent eruption that year and the earthquake which followed.

Sea Waves Follow Undersea Quakes

In 1910 Japanese authorities on Hokkaido Island evacuated the population from a region 150 miles west of the present disaster area. They saved untold numbers of people from a violent eruption of a near-by volcano and a series of earthquakes.

Any violent undersea movement of rock usually creates tremendous seismic sea waves, or *tsunami* as the Japanese call them. (These are not the same as tidal waves which are caused by forces of the sun and moon.)

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At the sugar house, a rough shed in the forest or near the farmer's other buildings, he boils the collected sap in vats. The water passes off as steam, leaving a sirup so pure that little refining is needed. It is poured into molds to harden into sugar.

Height of sirup and sugar making in recent years in New England, New York State, and Canada, was during World War II when cane sugar was being rationed. In terms of sugar, 572,000 pounds were produced in Vermont in 1942; 550,000 pounds in 1943; and 481,000 pounds in 1944. Then, in 1945, it dropped to 209,000. It was 344,000 pounds in 1951.

NOTE: The areas where maple sugar is produced in important commercial quantities may be located on the Society's map of the Northeastern United States.

WINSTON H. POTE

THE SAP'S A RUNNIN' IN THE SUGAR BUSH!—A SURE SIGN THAT SPRING—AND PANCAKES—ARE NOT FAR AWAY

This New Hampshire farmer carries the sugar-maple tree's sweet life fluid from a sled-borne collecting tank to the sugar house in the background. There the day's haul will be boiled until all the water evaporates. This leaves rich, almost pure, maple sirup, New England's flavorful gift to breakfast tables. The piled wood keeps the fire going under the boiling vats.

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Traveling with speeds of 200 to 700 feet per second, they pound the coast relentlessly and often cause severe damage. Tsunami followed Hokkaido's recent quake and devastated its eastern coast line, sweeping away fishing villages and boats.

The Hokkaido waves, variously described as 10 to 15 feet high, were mere ripples compared to some. In 1923 seismic waves reached a height of 35 feet in Sagami Bay, just south of Tokyo. In 1896, 95-foot waves pounded the shores of Miyako Bay, 300 miles north of Tokyo. The Dutch Harbor, Alaska, tremor of 1946 set up waves that swept over tops of palm trees as far away as Hawaii nearly six hours later.

NOTE: Hokkaido may be located on the Society's map of Japan and Korea.

For additional information about earthquakes, see "Where Earthquakes Followed Timur's Trail," in the *National Geographic Magazine* for March, 1940; and "Sakurajima, Japan's Greatest Volcanic Eruption," April, 1924. For further information on Japan, see "Japan Tries Freedom's Road," May, 1950; "Backwoods Japan During American Occupation," April, 1947; "Face of Japan," December, 1945; "Behind the Mask of Modern Japan," November, 1945; and "Women's Work in Japan," January, 1938.

See also, in the GEOGRAPHIC SCHOOL BULLETINS, March 13, 1950, "Fujiyama, 'Sacred' Peak, Symbolizes Japan"; and "Ecuador Knows Constant Threat of Nature," October 10, 1949.

T. A. JAGGAR

NOT BOMBS, BUT AN EARTHQUAKE, DID THIS TO TOKYO IN 1923

A few minutes changed Tokyo from a prosperous metropolis to this scene of misery. Homeless refugees built the crude shelters in the foreground by the canal. Fire gutted the building just across the canal which survived the earthquake. The temporary bridge across the canal replaced a destroyed one. By 1930 a new Tokyo had risen, with wide streets and fireproof buildings.

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